Calculus 1 Workbook

Implicit differentiation

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IMPLICIT DIFFERENTIATION

■ 1. Use implicit differentiation to find dy/dx at $(3,4)$ for the equation.

$$4x^3 - 3xy^2 + y^3 = 28$$

■ 2. Use implicit differentiation to find dy/dx for the equation.

$$5x^3 + xy^2 = 4x^3y^3$$

■ 3. Use implicit differentiation to find dy/dx for the equation.

$$3x^2 = (3xy - 1)^2$$

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IMPLICIT DIFFERENTIATION, EQUATION OF THE TANGENT LINE

■ 1. Use implicit differentiation to find the equation of the tangent line to $5y^2 = 2x^3 - 5y + 6$ at $(3,3)$.

■ 2. Use implicit differentiation to find the equation of the tangent line to $5x^3 = -3xy + 4$ at $(2, -6)$.

■ 3. Use implicit differentiation to find the equation of the tangent line to $4y^2 + 8 = 3x^2$ at $(6, -5)$.

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IMPLICIT DIFFERENTIATION, SECOND DERIVATIVES

■ 1. Use implicit differentiation to find d^2y/dx^2.

$2x^3 = 2y^2 + 4$

■ 2. Use implicit differentiation to find d^2y/dx^2.

$4x^2 = 2y^3 + 4y - 2$

■ 3. Use implicit differentiation to find d^2y/dx^2 at $(0,3)$.

$3x^2 + 3y^2 = 27$

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